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ABSTRACT

This pamphlet identifies the components of the overhead projector and suggests ways it can be used in presenting instruction. Advantages and disadvantages of the overhead are listed, and instructions are provided for setting up, positioning, and focusing the equipment. Information is also given on how to use opaque materials and overlays, how to achieve simple animation and silhouettes, and how to produce transparencies. Instructions for the use of dry transfer lettering and coloring are also provided. (MER)

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O.H.P.

A GUIDE TO THE USE OF THE OVERHEAD PROJECTOR

by

Robert W. Rowatt

IR009939

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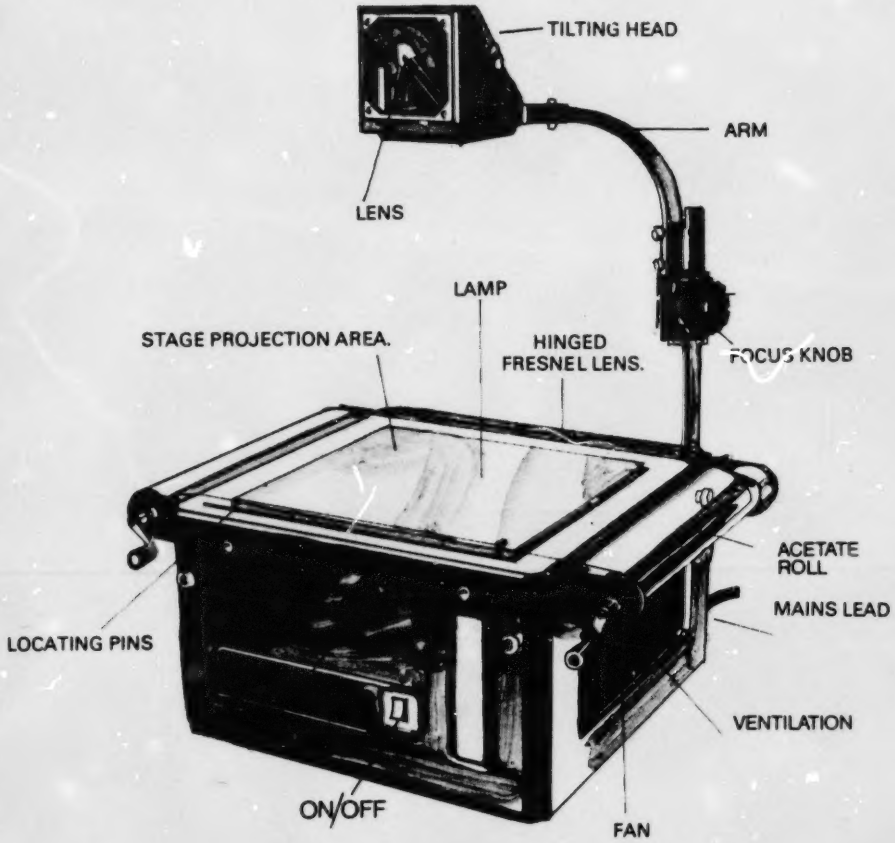
Designed by Ogilvie Design

THE OVERHEAD PROJECTOR

The overhead projector is one of the most versatile visual aids which can be used in a teaching or lecturing situation. Materials for use on the overhead projector can be quickly and easily produced using low cost materials. In addition, the overhead projector combines the advantages of the blackboard with those of the slide projector.



ADVANTAGES

1. The OHP is simple to operate and requires only a single normal power source.
2. In use the teacher or lecturer maintains face to face contact with the students.
3. The OHP may be used under normal lighting conditions. No blackout is required.
4. Colour is easily incorporated into the work.
5. Detailed transparencies may be prepared in advanced and retained for future use.
6. Complex concepts or diagrams may be built up gradually using the overlay technique.
7. Transparencies may be mounted in cardboard frames, filed and catalogued.
8. Animation is possible within diagrams or by rolling the background.
9. Transparent objects including perspex troughs of water may be projected. Shapes cut out of paper or card may be used to cast a silhouette and then animated by mounting on transparent supports.

DISADVANTAGES

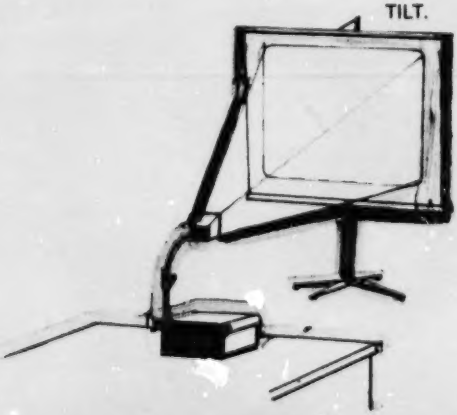
1. The OHP requires a power supply.
2. In addition to the OHP a screen or blank wall is required.
3. Like any piece of electrical equipment, routine maintenance and repair is required.

SETTING UP AND POSITIONING THE OVERHEAD PROJECTOR

The overhead projector should be set on a table at a comfortable working height. It may be used with the teacher/lecturer either standing or sitting.

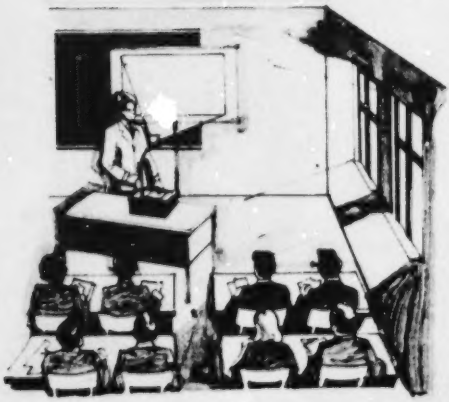
If the image from the overhead projector is projected onto a flat wall, "keystone" distortion may occur as shown —

This problem can be overcome by tilting the top of the screen outwards until the distortion has been minimised.



The screen may be placed in front of a class as an alternative to a blackboard or to one side as shown in the diagrams.

Careful positioning of the screen in the room out of direct sunlight ensures that the projected image remains clear.



FOCUSSING

Focussing is achieved by turning the knurled knob. This moves the head of the projector up or down the supporting column. The knob should be turned in either direction until the clearest image is obtained.

SAFETY NOTE

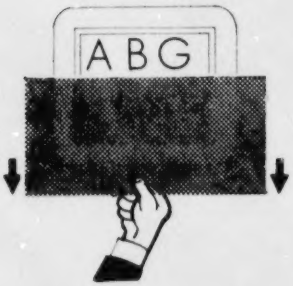
Ensure that the overhead projector mains supply cable does *NOT* cross any passage way or exit. This may restrict the positioning of the OHP in the room.

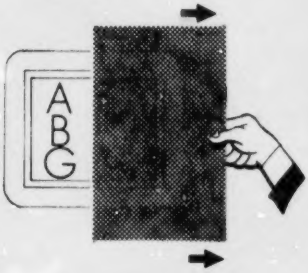
USING THE OVERHEAD PROJECTOR

3(i) Masking and Revealing

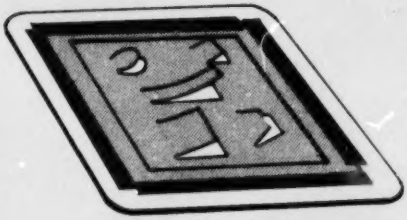
Any opaque material, including white paper, will prevent the projection of an image from the overhead projector on to the screen. This means that paper or card masks may be used to gradually reveal part of the projected image. Using white paper has the additional advantage of allowing the teacher/lecturer to see the areas of a projection which are masked to the students. This allows the transparency to be used as a lecture note. In addition, teachers' notes may be written on the paper. These notes are visible to the teacher but not to the students.

Opaque masks may be used to reveal information either horizontally or vertically as shown.





Alternatively, the whole transparancy can be covered by an opaque mask attached to the frame. Apertures of any size or shape may be cut from this mask allowing information to be revealed in sequence. For subsequent use, the aperture covers may be hinged to the background mask or the transparency frame as shown.



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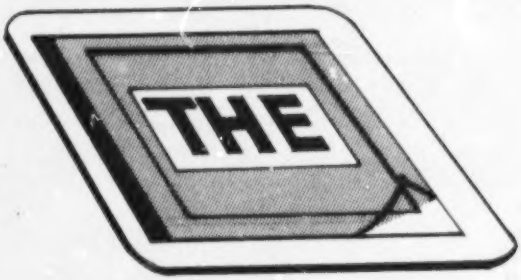
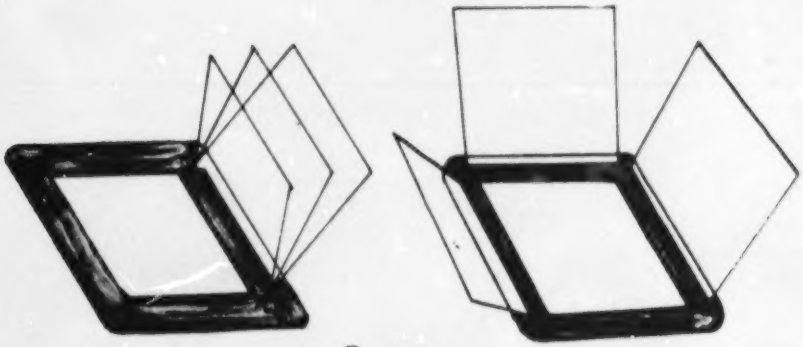
Similarly, a coloured transparent overlay with an aperture cut in the appropriate position may be used to highlight part of the information on a background tranparency.



3(ii) Overlays

Overlays may be used to build up or breakdown a complex transparency from its component parts. It is advisable to tape an acetate sheet to a cardboard mount. This acts as a base transparency on which the minimum information is included. Further information (e.g. the labels of a diagram) may be added by hinging subsequent sheets of acetate to the frame as shown.

There are several ways of mounting overlays depending upon whether the required sequence is fixed or is intended to be flexible. The differences in these mounting procedures are shown on the diagram below —

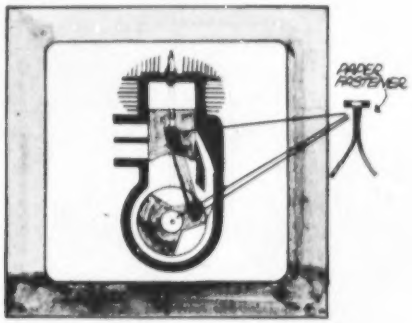


FIXED SEQUENCE.

FLEXIBLE SEQUENCE.

3(iii) Animation

Simple animation may be achieved by attaching coloured pieces of acetate to a base transparency using a moveable mount. For example, an animated diagram showing the operation of part of an internal combustion engine may be constructed as shown.



Similarly, characters cut out of acetate may be moved by hand during a story telling sequence.

If the illusion of travelling is required, a large background may be drawn on a roll of acetate which is then rolled beneath the characters.

Commercially available animated transparencies may be purchased. These use polarised light to give the illusion of motion.

3(iv) Silhouettes

Since any opaque material appears black when projected by the overhead projector, shapes may be cut out of paper or thin card and will appear as silhouettes on the screen. These may be moved by mounting them on transparent supports which are operated by hand. Using this technique, "shadow theatre" productions are possible using the overhead projector. The scenery required can be drawn on base transparencies which may be changed at will or a moving background produced as described previously.

PRODUCING TRANSPARENCIES

The following materials are required for the production of transparencies for the overhead projector.

Acetates (cut or in rolls)
Selection of permanent and water based felt pens of different colours and nib thicknesses.
Transparent ruler and OHP compass.
Stencils of various sizes.
Dry transfer lettering.
Self-adhesive colouring material.
Scalpel or razor blade.
Scissors.
Cardboard mounting frames.
Masking tape or sellotape.
Plain white paper.

For Use With The Thermal Copier:
Thermal acetates in a selection of colours.
Carrier for thermal copier acetates.

For Picture Lift Technique:
Self-adhesive transparent film.

4(i) Use of Acetate Rolls or Sheets

Transparent acetate may be purchased in rolls which are 10½" wide or in 10½" square sheets of different thicknesses. These sheets are available either loose or in tear-off pads. Generally, the heavier gauge acetate (draw film) is best for cut-outs and transparent supports. Acetate is easily scratched and the scratches may show up on projection so care should be taken when working with the material.

4(ii) Use of Felt-tipped Pens

It is only possible to write on acetate using "China-graph" pencil or felt-tipped pens which have been specically designed for use with the overhead projector. These pens are available in a selection of ink colours and tip thicknesses. Also, the ink contained in the pens may be either water or spirit based. The writing made with a water based pen is easily removed using a damp cloth while the writing made with a spirit based pen is more permanent.

Spirit based pen marks may be removed using a felt pad or cotton wool soaked in alcohol.

The different properties of these pens may be used to advantage. For example, if a table of experimental results is being produced on the overhead projector then the outline table should be drawn using permanent felt pen. The information may then be inserted into the table using water based pens. So, if the information has to be changed as the experiment is repeated all that is required is a gentle rub with a damp cloth.

4(ii) This removes the original information but leaves the table unaffected.

If difficulty is experienced in writing legibly with felt pens, stencils may be used to tidy up the work. It is inadvisable to apply blocks of colour using felt pens.

Neat circles may be drawn with the aid of an OHP compass. This instrument accepts a felt pen and has a small sucker in place of the compass point.

(iii) Use of Dry Transfer Lettering and Colouring

Dry transfer lettering (e.g. Letraset) may be applied to acetate in the normal way. It is worth noting however that any colour of dry transfer lettering will appear black on the projected image. Normal dry transfer lettering may also tend to crack due to the heat on the stage of the projector. To produce similar coloured lettering, a special type of flexible plastic dry transfer lettering is produced (e.g. Project-a-type). This is available in a range of colours, types styles and sizes. It can be used to produce neat permanent multi-coloured lettering but has the disadvantage of being time consuming to use.

Blocks of colour may be added using commercially produced self-adhesive transparent colouring material (e.g. Transfilm). This is easily applied by cutting a piece of the material slightly larger than the area required to be coloured. The backing sheet is then removed and the colouring material applied to the area. The excess colouring material is then carefully trimmed off using a razor blade or scalpel. The end result is an even block of colour of the required shape.

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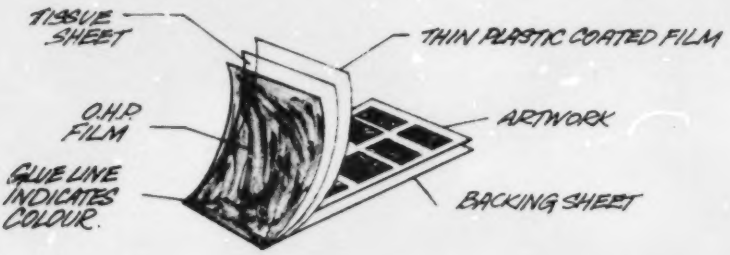
4(iv) Transparencies from printed Materials

(a) Using thermal copier or photocopier.

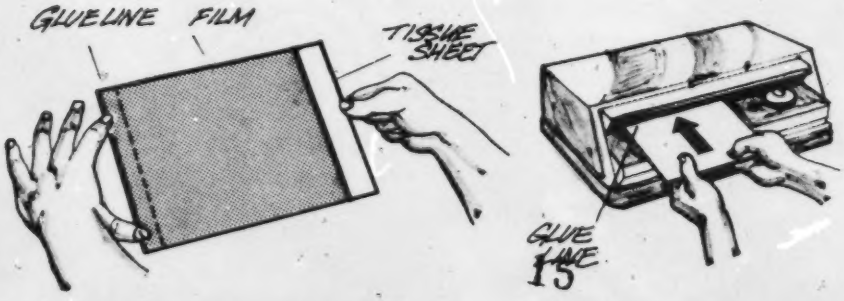
Effective overhead transparencies can be produced from any printed material with the assistance of a thermal copier. To produce these transparencies specially treated acetates are required which may be purchased in packs of different colours, (e.g. 3M brand type 888 image tone wide latitude transparency preparation).

The original is placed as shown in the diagram.
The protective paper sheet is then removed carefully ensuring that the thin plastic sheet is not wrinkled.
The whole package, film side up is then passed through the thermal copier.



The result is a transparency in which all the white areas of the original are transparent and all the black areas of the original are in the selected colour.

The image intensity may be varied by adjusting the speed at which the carrier passes through the thermal copier.



Overhead transparencies may also be produced using a dry photocopier. In this case, the paper stock in the copier is replaced with heavy gauge acetate. Copies are then taken in the normal way.

The size of transparencies produced by both of these methods is usually A4 size. This is slightly smaller than the normal 10½" square acetate but is easily masked when mounting.

(b) Picture Lift Technique

This technique allows coloured overhead tranparencies to be made from pictures which appear in glossy magazines. In principle it uses a transparent self-adhesive film to lift only the ink from the picture. Unfortunately, not all magazines can be used for this process. The picture lift technique is possible only with pictures that are printed on clay based papers.

The easiest way to assess whether a particular paper is clay based or not is to rub the corner of a page with a moist finger. If a chalky white residue is left on the finger then the paper is clay based. Typical examples of magazines using clay based paper are "National Geographic Magazine", "Scientific American" and "Life".

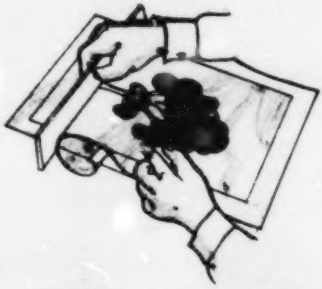
The main disadvantage of this technique is that the original picture is destroyed during the making of the transparency.

The method is as follows: —

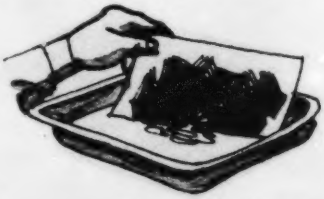
1. Choose a suitable picture and cut it from the magazine.
2. Peel the backing from the transparent film and cover the whole picture.

NOTE: Transparent self-adhesive films such as "Transpaseal" and "Librafilm" are suitable.

The film should be applied evenly over the picture excluding air bubbles. This is most easily done by pressing the film onto the picture with a straight edge such as a ruler.



3. Trim off any excess adhesive film from the edges of the picture.
4. Now soak the film with the picture in a dish of lukewarm water. Adding a few drops of liquid detergent will speed up the wetting process. The picture should be soaked for at least fifteen to twenty minutes.



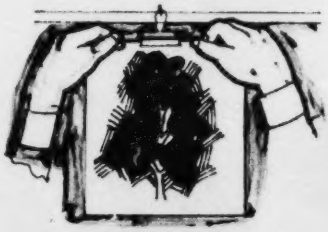
5. After this time it should be possible to peel off the backing paper leaving only the inks adhering to the film. If the backing paper cannot be removed easily, then it should be returned to the dish of water and rubbed gently with a clean sponge.

   Vigorous rubbing must be avoided otherwise patches of ink may be lifted in addition to the backing paper.

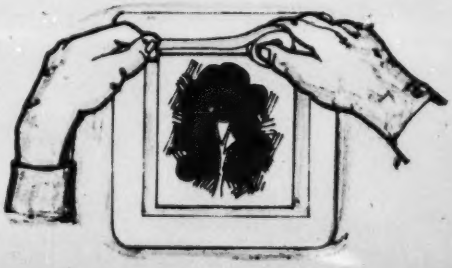
6. The picture should then be drained and the back of it rubbed gently with a soft sponge and a few drops of detergent. It should then be rinsed in clean water.

This process should be continued until on drying, no chalky white residue is left on the back of the film..

7. The film with the picture on it should then be hung up to dry.



8. Once dry the film with the picture may be mounted on a cardboard mount in the normal way. It is also worth attaching a sheet of clear acetate over the back of the picture to avoid the inks being accidently rubbed off.



Storing Transparencies

One of the main advantages of preparing good overhead transparencies is that they can be re-used as required. It is worthwhile devising a storage and retrieval system which allows you to access a particular transparency at any time.
The following points should be remembered when devising such a system.

1. It is always advisable to mount the transparencies in cardboard mounts. This is especially important when the transparencies include overlays or hinged masks.
2. Transparencies should be catalogued by subject and individually numbered.
3. Transparencies should be stored flat or upright to avoid the frames being bent or distorted. Commercially produced storage boxes are available for this purpose but the boxes in which the cardboard mounts are supplied are an adequate substitute.
4. Transparencies should be stored away from dust (particularly chalk dust) and moisture to avoid any damage which would show up on projection.

If these simple rules are observed you should be able to build up a library of good visual aids which are always available for use.